

## CLAIMS

What is claimed is

- 5           1.     A method for forwarding messages in a multi-node network comprising  
unconditionally decrypting, by a forwarding node, each message received by said  
forwarding node.
- 10           2.     The method of claim 1, further comprising unconditionally encrypting each  
message transmitted by said forwarding node.
3.     The method of claim 2, wherein said unconditional decrypting and said  
unconditional encrypting are carried out using symmetrical encryption and decryption.
- 15           4.     The method of claim 2, wherein said unconditional decrypting and said  
unconditional encrypting are carried out using asymmetric encryption and decryption.
5.     A method for forwarding messages in a multi-node network comprising  
decrypting, by a forwarding node, each message received by said forwarding node prior to  
20     determining a destination for said received message.

6. The method of claim 5, further comprising encrypting, by said forwarding node, each message transmitted by said forwarding node.

7. The method of claim 6, wherein said decrypting and said encrypting are carried out using a symmetrical encryption and decryption algorithm.

8. The method of claim 6, wherein said decrypting and said encrypting are carried out using an asymmetric encryption and decryption algorithm.

9. A method for encrypting and decrypting messages in a multi-node network, comprising:

- (a) encrypting a message by a source node and transmitting said encrypted message to a forwarding node;
- (b) receiving and unconditionally decrypting said encrypted message by said forwarding node;
- (c) unconditionally re-encrypting said decrypted message by said forwarding node and transmitting said re-encrypted message to a destination node; and
- (d) receiving and decrypting said re-encrypted message by said destination node.

10. The method of claim 9, wherein said encrypting said message by said source node, said unconditional decrypting of said transmitted message by said

forwarding node, said unconditional re-encrypting of said decrypted message by said forwarding node, and said decrypting of said re-encrypted message by said destination node, are carried out using symmetrical encryption and decryption.

- 5           11.    The method of claim 10, wherein:
- (a)    said encrypting said message by said source node is carried out using a first key;
- (b)    said decrypting said re-encrypted message by said destination node is carried out using said first key;
- 10           (c)    said unconditional decrypting of said transmitted message by said forwarding node is carried out using a second key; and
- (d)    said unconditional re-encrypting of said decrypted message by said forwarding node is carried out using said second key.

- 15           12.    The method of claim 11, wherein said second key is different from said first key.

13.    The method of claim 11, wherein said second key and said first key are the same.

20

14.    The method of claim 9, wherein said encrypting said message by said source node, said unconditional decrypting of said transmitted message by said

forwarding node, said unconditional re-encrypting of said decrypted message by said forwarding node, and said decrypting of said re-encrypted message by said destination node, are carried out using asymmetric encryption and decryption.

- 5           15.    The method of claim 14, wherein:
- (a)    said encrypting said message by said source node is carried out using a first encryption key;
- (b)    said decrypting said re-encrypted message by said destination node is carried out using a first decryption key;
- 10          (c)    said unconditional decrypting of said transmitted message by said forwarding node is carried out using a second decryption key; and
- (d)    said unconditional re-encrypting of said decrypted message by said forwarding node is carried out using said second encryption key.

- 15          16.    The method of claim 15, wherein said second encryption key is different from said first encryption key, and said second decryption key is different from said first decryption key.

17.    The method of claim 15, wherein said second encryption key is the same
- 20    as said first encryption key, and said second decryption key is the same as said first decryption key.

18. An encryption and decryption system for a multi-node network, comprising:

- (a) at least one source node configured to encrypt messages and to transmit said encrypted messages;
- (b) at least one forwarding node configured to receive and unconditionally decrypt each said encrypted message, said forwarding node configured to unconditionally re-encrypt and transmit said decrypted messages; and
- (c) at least one destination node configured to receive and decrypt said re-encrypted messages.

19. An encryption and decryption system for a multiple node network, comprising at least one forwarding node, said forwarding node including means for unconditionally decrypting all received messages, and means for unconditionally encrypting all transmitted messages.

20. The encryption and decryption system of claim 19, further comprising at least one source node, said source node including means for encrypting messages and transmitting said encrypted messages to said forwarding node.

21. The encryption and decryption system of claim 20, further comprising at least one destination node, said destination node including means for decrypting messages transmitted by said forwarding node.

22. The encryption and decryption system of claim 21, wherein said means for encrypting messages by said source node, said means for decrypting messages in said destination node, said means for unconditionally decrypting messages by said forwarding node, and said means for unconditionally encrypting messages by said forwarding node comprises symmetrical encryption and decryption.

23. The encryption and decryption system of claim 21, wherein said means for encrypting messages by said source node, said means for decrypting messages in said destination node, said means for unconditionally decrypting messages by said forwarding node, and said means for unconditionally encrypting messages by said forwarding node comprises asymmetrical encryption and decryption.